

1956

CALHOUN AND BATCHTOWN REFUGES
NARRATIVE REPORT
JANUARY, FEBRUARY, MARCH, APRIL, 1956

I. GENERAL

A. Weather Conditions:

The maximum temperature in January was 3° lower than last year; February was 9° higher; March was 1° lower; and April was the same as last year. The minimum temperatures were lower in every month in 1955 except April, which was 5° lower this year. During the month of April high winds occurred, but no big damage was observed.

Relative readings for this period and the same period last year are shown below:

Month	Year	Maximum	Minimum	Precipitation
January	1955	62	0	1.85
	1956	59	1	.79
February	1955	65	-6	3.28
	1956	74	15	2.74
March	1955	86	5	1.96
	1956	85	20	.73
April	1955	89	32	2.27
	1956	89	27	2.84
1955 TOTAL				9.36
1956 TOTAL				7.10

Precipitation for the period was 2.26" lower, compared with the same time last year.

B. Water Conditions:

The high readings were lower in all four months than in the same period a year ago. Low readings were lower in every month than last year. There has been no high water in this portion of the river yet. The fluctuations of the dam were not bad in Pool 26, but there was a draw-down in Pool 25 the first part of April.

A comparison of pool levels in Pool 26, compared to the same period in 1955, is shown in the following table:

Month	Year	High	Low	Difference
January	1955	16.2	15.0	1.2
	1956	15.6	14.6	1.0
February	1955	16.2	14.9	1.3
	1956	15.4	14.7	.7
March	1955	16.1	15.3	0.8
	1956	15.5	14.7	0.8
April	1955	16.4	15.4	1.0
	1956	16.2	15.3	0.9

Maximum month variation in 1956 was 1.0, compared with 1.3 in 1955.

II. WINDLIFE

A. Migratory Birds:

1. Populations and Behavior:

(a) Waterfowl:

As the period opened, Batchtown Refuge held only 9,000 ducks, compared to 41,100 at the beginning of the period a year ago. The peak population for the period amounted to only 45,900, occurring the week of February 25, compared to a peak of 118,000 the week of February 19 in 1955. Total waterfowl use of Batchtown this spring was 2,158,100 days, or 41.5% below the 3,692,500 days recorded for the same period in 1955.

As usual, mallards, with 1,300,600 days use, were the principal ducks found, comprising 60% of total use. This species also accounted for an identical 60% of total use in 1955. The peak population this spring was 40,000, occurring the week of February 25, compared to the 1955 peak of 100,000, which was recorded a week earlier.

Last spring pintails, with 578,200 days use, accounted for 15.6% of total use. This year, however, only 110,600 days, or 5.1% of total use, was attributed to pintails. The peak this spring was 4,000, occurring the week of March 24; while in 1955 the peak of 30,000 occurred the week of March 12.

Scaup, with 403,900 days use this spring, accounted for 18.7% of total use, for second place. A year ago scaup were in third place, with 478,100 days, or 12.9% of total use.

All other species were found in reduced numbers, and blue-winged teal, with 65,800 days use, were the only ducks making over 50,000 days use during the period.

Puddle ducks made up 73.3% of total use of the Batchtown Refuge this spring, while divers accounted for the remaining 26.7%. In 1955, however, puddlers accounted for 82.5% of total use and divers the remaining 17.5%. Thus, divers showed greater comparative use this spring than last.

Batchtown was frozen up longer this spring than last, causing many ducks to move into the Sny bottoms. This, coupled with a reduced food supply on the refuge, probably accounted for decreased use of the Batchtown Refuge this spring.

Calhoun Refuge had 284,500 ducks present as the period opened, compared to 115,800 for the same time in 1955. The peak population of 412,600 occurred the following week. In 1955, however, the peak was only 339,300, and did not occur until the first week in February. Total waterfowl use of Calhoun this spring was 11,496,800 days, or 5.6% greater than the 10,885,700 days recorded in 1955.

Mallards again held first place with 9,495,500 days use, compared to 8,282,400 days use a year ago. This spring, mallards accounted for 82.5% of total use, compared to 76% of total use in 1955.

Scaup, with 611,100 days, were in second place, accounting for 5.3% of total use. This was somewhat below the 743,400 days (6.8% of total use) recorded last spring, when scaup were in third place.

Canvas-backs, which were in second spot a year ago with 824,600 days (7.58% of total use), dropped to third place this spring with 455,000 days use, or 3.95% of total use. Canvas-back held a peak of 25,000 birds for three consecutive weeks a year ago, leaving in early March. This spring, however, they peaked at only 10,000 on two different occasions, but were present in numbers for a longer period of time.

At Calhoun puddle ducks accounted for 87.8% of total use this spring, compared to 84.5% a year ago; while divers accounted for 12.2% of total use this year, compared to 15.5% a year ago.

By the end of the period only 10,100 ducks remained on Calhoun, mostly blue-winged teal (5,000) and shovellers (3,000).

During January and February ducks appeared to have changed their feeding habits, going farther away from the

refuge to feed than in past years. Fields throughout the area had a lot of corn left by mechanical pickers, and ducks were observed feeding in such fields almost all over Jersey County and adjoining Illinois Counties, as well as in Missouri away from the river.

There was an outbreak of lead poisoning this winter, and in late January and early February an estimated 400 ducks, mostly mallards, were lost from this cause.

The following table shows peak concentrations of puddlers and divers, together with estimated duck days use, for the Batchtown and Calhoun Refuges:

	Peak Concentrations		Duck Day Use Totals	
	Batchtown	Calhoun	Batchtown	Calhoun
Puddle Ducks:				
Mallard	40,000	400,000	1,300,600	9,495,500
Black	500	500	20,300	23,100
Gadwall	400	800	15,400	23,800
Baldpate	700	3,000	27,300	95,200
Pintail	4,000	5,000	110,600	151,900
G.W.teal	300	400	5,600	7,700
B.W.teal	3,000	10,000	65,800	198,100
Shoveller	1,000	4,000	23,800	75,600
Wood duck	300	500	12,600	17,500
TOTALS			1,582,000	10,088,400
Divers:				
Redhead	200	1,000	16,800	43,400
Ring-neck	2,000	5,000	45,500	128,800
Canvas-back	1,500	10,000	52,500	455,000
Seaup	15,000	20,000	403,900	611,100
Golden-eye	200	500	8,400	17,500
Buffle-head	100	1,000	2,800	12,600
Ruddy	500	4,000	12,600	88,900
Mergansers	600	2,000	33,600	51,100
TOTALS			576,000	1,408,400
GRAND TOTALS			2,158,100	11,496,800

Coot peaked at 5,000 the week of March 12 on Batchtown and made 126,000 days use of the refuge. On Calhoun Refuge coot peaked at 8,000 the week of March 24 and made 209,300 days use. This represents increased use of 68% in coot use of Batchtown Refuge and 130% in coot use of Calhoun.

(b) Geese:

Canada Geese

Canada geese were on the Calhoun Refuge almost all winter. The first week of January we had 2,000 birds and on the ninth week of the reporting period we reached a peak of 3,000 birds. They fluctuated up and down until the end of the period. A total of 138,390 days use was made of Calhoun Refuge by Canada geese, compared to 64,750 days a year ago. This represents an increase of 113%.

At Batchtown Refuge Canada geese were present only during the two weeks from March 17 to 30. This species peaked at 500 birds the week of March 24, and made a total of 4,200 days use this spring. This is an increase of 50% in Canada goose use here on that area.

Snow Geese

Blue geese were present on Calhoun Refuge as the period opened, with 2,000 present. Numbers held fairly steady for several weeks, and this species, while peaking at only 2,000 birds, made a total of 84,315 days use on Calhoun Refuge. This was a decrease of 57% in total use by this species.

At Batchtown Refuge snow geese were present only during the same two weeks as were Canadas and blues. They peaked at 700 birds the week of March 24, and made a total of 5,250 days use. This was an increased use of 114%, compared to the spring of 1955.

Blue Geese

As the period opened there were 2,000 blue geese on the Calhoun Refuge. This was also the peak population for the spring, although that number was present for the first two weeks before dropping to 1,000, which were present for the next four weeks. Blue geese made 85,960 days use of Calhoun Refuge, compared to 173,250 days in 1955. This represents a decreased use of 50%.

On Batchtown Refuge blues were present only on two different weeks. The peak of 200 was recorded the week of March 24. Blue geese made a total of 2,100 days use this spring, compared to 1,750 days use in 1955. This represents an increased use of 20%.

Total Goose Use

Total goose use this spring amounted to 308,665 days, compared to 435,750 days in 1955, for a loss of 29%. On Batchtown Refuge goose use totaled 11,550 days, compared to only 7,000 days in 1955. This represents increased total use on Batchtown of 65%.

Goose use of the two areas is shown in the following table:

Refuge	Canada geese	GOOSE DAY USE		1956 TOTAL	1955 Total compared
		Snow geese	Blue geese		
Batchtown	4,200	5,250	2,100	11,550	7,000
Calhoun	138,390	84,315	85,960	308,665	435,750
TOTALS	142,590	89,565	88,060	320,215	442,750

(d) Egrets:

There were about 50 egrets observed on the Calhoun Refuge April 12 and about 100 were observed on the Batchtown area the same date; as compared with 30 on the Calhoun Refuge on April 1 of last year and 20 on the Batchtown Refuge April 1 of last year. At the end of this period there are an estimated 300 egrets in each area.

(e) Shorebirds and Other Waterbirds:

Wilson snipe showed an increase in the Batchtown area. An estimated 200 of them used the area this spring. This area was very attractive to this species as the pool was very low during the month of April, making good feeding ground for them. Last year about 100 Wilson snipe used the area.

Killdeer were here in good numbers, also sandpipers, yellow-legs, and some curlews.

About 50 Wilson snipe have been observed in the Calhoun Refuge. This was about the same as last year.

A few killdeer, yellow-legs, and curlews were observed in the Calhoun Refuge.

Blue heron are here in good numbers. An estimated 125 birds occur in each area as compared to 200 birds using both areas last year during this period.

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2. Food and Cover:

Food conditions were very good on the Calhoun Refuge. We had more ice this winter than last, but there was more corn in the general area than last year. The ducks ranged farther away from the refuge during the month of January than they did the year before, even though there was plenty of corn close by. Geese stuck closer to the refuge than did ducks. This was probably due to the browse available on the refuge land. It is believed the reason ducks did not feed in refuge fields as much as they did last year was because we were not able to knock down our corn until so late that the ducks found other fields farther away to feed in. They never did come back to the fields on the refuge in big numbers. Lots of ducks shifted to the Sny bottoms, where there was an enormous amount of mechanically picked corn for them to feed on.

The Batchtown area was frozen up longer than the Illinois bottoms, moving the waterfowl concentrations to the Illinois bottoms or other places. There was abundant corn left in fields adjacent to the refuge in the Batchtown area.

B. Upland Game Birds:

In the Calhoun Refuge the quail population has held up very good during this period. Several coveys have been seen this spring using the marginal areas of the Calhoun Refuge. The Batchtown area has six or seven coveys of quail. There are ample food and cover in both areas to sustain fairly high populations of these birds. The lower than normal water in both areas is probably the reason for birds using the refuges. Had high water come, the birds would have been forced to move to higher ground.

C. Big Game Animals:

There are an estimated seven or eight deer using the Batchtown closed area. There is plenty of food and cover in this area to maintain a goodly number of deer.

The Calhoun Refuge has about 12 deer using the area. There are ample food and cover to take care of about this number of deer. They use private land adjacent to the refuge. Both refuges could take care of a lot more deer.

D. Furbearers:

(a) Muskrate:

The muskrat population on the refuge and adjacent areas looks the best since the refuges were established. The

Batchtown area looks better than it has for several years. The low water for the past three years has probably been a big factor in the increase of this species. The Stump Lake area was closed by the State, and this has brought an increase here.

(b) Mink:

The mink population is up. Several have been observed this spring by fishermen and refuge personnel. The increase of muskrats in the bottoms may be one cause for this. The pressure was not too great during the trapping season.

(c) Skunk:

The skunk population in the Batchtown area has shown some increase. Farmers in this area report observing several while doing their farm work. The Calhoun area has very few skunks as most of the marginal areas are too low for this species.

(d) Beaver:

Beaver are holding about the same in both areas. The Batchtown area probably has had a little increase. Most of the islands on the Mississippi and Illinois Rivers have a goodly number of beaver signs on them.

(e) Otter:

No otter signs have been seen in either area.

(f) Raccoon:

Raccoon are plentiful on both refuges and most islands on the Illinois and Mississippi Rivers have lots of raccoon signs on them. They are no doubt increasing. A 2-day old brush pile was burned, and a big raccoon ran out.

(g) Foxes:

Foxes are building up again in both areas. A trip through the refuges after a snow showed lots of signs of fox using the areas. They are probably increasing again.

E. Predaceous Birds:

Eagles were numerous in both areas during this period, with an estimated 150 birds using both areas. Wherever there

was a concentration of ducks there were plenty of eagles. Most all crippled and lead poisoned ducks were eaten by this species. They kept pressure on the ducks all through this period.

Hawks are common in both the Batchtown and Calhoun Refuges. Red-tailed and marsh hawks were in the majority, and probably showed some increase here.

Owls are observed in good numbers throughout the timber areas. They are holding their own.

F. Fish:

Fish are plentiful in both the Batchtown and Calhoun Refuges. Fishermen report plenty of both game and rough fish this spring.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

At intermittent periods during January and February the exterior boundary line at the Gilbert Lake portion of the Calhoun Refuge was reconditioned, and several wooden posts were set near the project pins to prevent loss or destruction.

At Gilbert Lake, too, the road leading to the cornfield was cut out wider to facilitate moving farm equipment.

The boundary line from the power line south on the west side of Swan Lake in Calhoun County was cut out and reconditioned.

On the southeast side of Swan Lake, where the correct boundary line was established last summer, the Service has assumed the farming on several acres of farm land which were made available when the line was corrected. The road leading along the edge of the woods was brushed out to permit the farmer to reach this field without leaving the refuge lands. Posts removed from this roadway were set up along the boundary pins to aid in locating them in the future, and to protect them from damage from farm equipment.

On March 9 additional clearing of brush was initiated on Calhoun Refuge. Three days work was done by a bulldozer. This cost the Government \$321.00, and resulted in the clearing

of about 35 acres of farm land which had grown up to willow. On March 12 four men including the Refuge Manager, working with a power saw and axes, cleared an additional 35 acres of willow between the bulldozer clearing and Swan Lake. In addition to this, all the brush around what is known as "School House Lake" was bulldozed, cut, and piled.

About three acres were cleared along the southeast side of Swan Lake in conjunction with the new fields made available when the boundary line was corrected.

On the south side of Swan Lake, Schultz Bros. had about 10 acres of permit lands bulldozed next to the lake. In addition, Mr. Bradley has done some improvement work such as removing down trees with a tractor.

All this work around Calhoun Refuge should make a big difference in use made of the area by ducks and geese. Fields are now opened up, giving clearer access to the fields from Swan Lake, and geese especially should work into the fields better than in the past. At the present time geese are able to move in low from the lake and settle down in the fields without interference from brush, etc. Potential use of the area by geese has been greatly improved.

On the Batchtown Refuge part of the exterior boundary was reconditioned, and a boundary line through the willows near the Snyder Kamp club houses was cut out.

The road leading to the fields in the interior of Batchtown Refuge was dressed with rock and packed down with a bulldozer. Two days were spent cutting and widening the road through the bottoms, involving four man days of labor.

One field in Batchtown Refuge was cleared a little, with four men working on the job for one day, before it was learned that funds for this work were exhausted and the work had to cease. Consequently, the field clearing has not yet been completed.

Now that the road into the area has been put in shape, it is expected that more rehabilitation work can be done in the future. Mr. Mortland expects to get about 30 acres cleared for planting this spring, in addition to the fields he is already working.

In addition, we have a request for a permit from another person, who wishes to clear about 40 acres of land

west of Mortland's permit, so that he can farm in the future. Processing of this permit has been held up pending clearance from the Corps for clearing the land. This clearance is believed needed as a result of the recent Chicago meeting with the Corps relative to timber resources, etc.

B. Plantings:

h. Cultivated Crops:

There were fifteen cooperative farming agreements issued during this period. Most of them have started to plow their fields in preparation of planting. Prospects look good as no prolonged high water is expected.

VI. PUBLIC RELATIONS

A. Recreational Uses:

Boating and fishing were extensively done in both refuges throughout March and April by commercial fishermen and pole and line fishermen. Boats are increasing each year on the rivers, and boat liveries are adding more boats to their fleets each year.

During the period the following recreational use was made of the two refuge units:

Refuge	Days Use	
	Fishermen	Miscellaneous
Batehtown	2,004	420
Calhoun	4,291	820
TOTALS	6,295	1,240

B. Refuge Visitors:

Mr. W. D. Carter was here from February 29 to March 1, checking with farmers about change of plans on sharecropping. Proposed road work and clearing job was planned.

C. Refuge Participation:

The Refuge Manager attended an evening meeting at Alton, Illinois, on April 12, with several representatives of different sportsmen's clubs. Representatives from the Illinois Department of Conservation and the Corps of Engineers discussed the matter of whether or not the clubs were satisfied

with last year's hunting on State managed areas. The clubs and hunters seemed to be satisfied with it and suggested only a few small changes.

E. Fishing:
Sport:

Pole and line fishing started a little later this year due to colder weather. Not much was done until the latter part of February, compared with the first part of February last year. Bass have been taken in goodly numbers this spring, with some better ones than last year. Bluegill and crappie fishing has not been as good as last year because of too much wind. Boat livery operators are looking for a fair season.

Commercial:

Commercial fishing has been very good since the ice broke up. Lots of carp and buffalo, also catfish in goodly numbers, have been marketed this spring. White perch were brought in in goodly numbers. Fishermen expect a good season.

F. Violations:

Two cases were handled in State Court during this period, with a \$50.00 fine and \$4.00 costs in each case.

VII. OTHER ITEMS

A. Items of Interest:

One of the commercial fishermen from the Batchtown area who was fishing near the Batchtown closed area during the first part of April drowned and his body has not been found yet.

May 14, 1956


Ray C. Steele, Superintendent

(Sgt.) R. W. Burwell



Ditch draining Schoolhouse Lake, Calhoun
Refuge. Picture taken before clearing.
February 24, 1955.



Same ditch after clearing. March 9, 1956.



School House Lake area, Calhoun Refuge.
Marsh area and willow-shrub border. Picture
taken before clearing. February 24, 1955.



Same area after clearing was done.
March 9, 1956.

1956

CALHOUN AND BATHTOWN REFUGES
NARRATIVE REPORT
MAY, JUNE, JULY, AUGUST, 1956

I. GENERAL

A. Weather Conditions:

This summer was not as hot as last year. The maximum reading was lower in every month except May, which was 3° higher this period. The minimum reading was lower in every month during the period. This was generally a cooler period than last year. More rain fell this year, and we had a splendid growing season.

Relative readings are shown below:

Month	Year	Maximum	Minimum	Precipitation
May	1955	92	46	1.93
	1956	95	29	6.92
June	1955	96	46	4.32
	1956	96	45	2.65
July	1955	101	64	3.59
	1956	99	57	6.55
August	1955	101	60	.40
	1956	98	50	2.36
TOTAL 1955				10.24
TOTAL 1956				18.48

B. Water Conditions:

In Pool 25 water levels were near normal pool stages throughout the period. No floods occurred during this period.

In Pool 26 water levels were held at or near normal pool most of the time, and fluctuations due to manipulations of the dam were minor. There were no big draw-downs during this period.

A comparison of pool levels in Pool 26 to the same period in 1955 is shown in the following table:

Month	Year	High	Low	Difference
May	1955	16.1	14.6	1.5
	1956	16.1	15.1	1.0
June	1955	15.9	15.2	.7
	1956	15.8	14.8	1.0
July	1955	15.6	15.1	.5
	1956	15.7	15.1	.6
August	1955	15.4	14.8	.6
	1956	15.6	14.7	.9

II. WILDLIFE

A. Migratory Birds:

1. Populations and Behavior:

(a) Ducks:

On the Batchtown Refuge there were 1,225 ducks remaining as the period opened, including 25 mallards, 100 baldpate, 500 blue-winged teal, 300 shovellers, 100 wood ducks, and 200 scaup. By the third week of the period all ducks had left except 15 mallards and 50 wood ducks, which remained throughout the period. It was not until the end of the period that other species reappeared. For the last three weeks of the period there were a few blue-winged teal present too.

Ducks used Batchtown Refuge an estimated 28,070 days this summer, compared to 37,695 days of use a year ago, representing decreased use amounting to 25.5%.

Resident wood ducks going into the summer this year were more numerous than in 1955 for there was a minimum of 50 of these birds this year compared to only 20 a year ago. There were also a few more mallards this year, although the number was insignificant.

A year ago no broods of any kind were found on Batchtown Refuge, while this summer two broods of mallards and five broods of wood ducks were observed, for a total production of 72 young ducks.

The period opened at Calhoun Refuge with 3,750 ducks present, compared to 875 a year ago. Ducks present as the period opened included 50 mallards, 100 baldpate, 2,000 blue-winged teal, 1,000 shovellers, 100 wood ducks, and 500 scaup.

By the third week of the period only a few mallards, wood ducks, blue-wings, and scaup remained, and no new species had arrived by the end of the period.

Ducks made a total of 53,270 days use of the Calhoun Refuge this summer, compared to 68,355 days a year ago, representing decreased use of 22%.

Resident wood ducks were more numerous this summer, with 100 present compared to only 20 a year ago. However, an estimated 16 broods of wood ducks were raised this year compared to 15 a year ago, so the increased resident population did not materially improve production.

As the period drew to a close a few additional blue-wings and wood ducks started showing up, so that there were 200 of each present.

A comparison of broods for the 1955 and 1956 seasons is shown in the following table:

(See table on page 4.)

BROOD COUNT SUMMARY - Batchtown and Calhoun Refuges

1955-1956 Seasons Compared

Species	BATCHTOWN REFUGE						CALHOUN REFUGE					
	No. broods		Est. total		Est. total		No. broods		Est. total		Est. total	
	seen	broods	seen	broods	Production	seen	seen	broods	Production	seen	broods	Production
	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
Mallard	0	2	0	2	0	18	2	4	2	8	16	48
B.w.teal	0	0	0	0	0	0	0	2	0	4	0	32
Wood duck	0	5	0	5	0	54	15	8	15	16	120	144
Scamp	0	0	0	0	0	0	0	2	0	4	0	32
TOTALS	0	7	0	7	0	72	17	16	17	32	136	256

Coot were present on both refuges the first three weeks of the season and then they all left. None were seen after that on Batchtown Refuge, although 50 arrived on Calhoun Refuge the last week in July and that number remained unchanged through the rest of the period.

A total of 2,310 days use was made of Batchtown Refuge this summer, compared to 2,800 days last year; and they used Calhoun Refuge a total of 5,259 days, compared to 2,100 days in 1955.

(b) Geese:

No geese used either refuge this period.

(d) Egrets:

Egrets were plentiful in both refuge areas this summer. Very little change was noted compared to last summer. On each refuge an estimated 3,000 egrets were observed.

Snowy egrets were more common on Calhoun Refuge this summer than in any previous year. An estimated 25 of these birds were present on Calhoun most of the summer. They were most commonly found along the west shore of Swan Lake.

(e) Shorebirds and Other Water Birds:

Very few shorebirds were present on either refuge during the summer, and as the period closed they had not yet made their fall appearance.

Blue herons were present in goodly numbers. At the Batchtown Refuge numbers of these birds dropped from 500 last summer to 400 this year; while on Calhoun Refuge they increased from 800 last year to 850 this summer.

(f) Mourning Doves:

Not too many doves were found on either refuge, but on areas adjacent to the refuges there was a good increase in numbers.

2. Food and Cover:

The food and cover in the Calhoun Refuge are outstanding this year, and they are a lot better than last year. Sage pondweed is good all around Swan Lake and it extends further

out in the lake than before. American pondweed covers more area in the lake than last year. From the vicinity of the power line down to the timber line the lake is a solid mass of feed. The marginal areas are looking very good with wild millet, cutgrass, some smartweed, and several other species present. Sagittaria has made a good growth along all marginal areas. Pond lily, like last year, has Fuller and Stamp Lakes almost closed, and it is working down in Swan Lake. Gilbert Lake also has a lot in it this year.

The crops around the Calhoun Refuge look good, and the corn is wonderful. We will have the biggest variety of food for the ducks this year that we have ever had.

The Batchtown area does not look too good, however. There is very little food here as compared with past years. The water was held up in this area during the growing season and has cut down smartweed growth, with the result that there is very little smartweed in the area. Wild millet is not as good as last year either. Marginal areas do not extend out from banks, and cutgrass is reduced below last year. This area has less natural food than last year.

Keeping the water at pool stage is controlling willow growth in sloughs and lakes in this area. The crops in and around the refuge are good. This area may not hold a big concentration of ducks very long.

B. Upland Game Birds:

The quail crop in Calhoun Refuge seems to be holding as good as last year. Several quail have been observed, and a good number of young birds have also been observed. Quail appear to be as numerous as last year.

The Batchtown Refuge has a good number of quail using this area. This area is about the same as last year. Foxes probably limit an increase here on this species for two dens observed had quail feathers and bones present.

There is plenty of upland game food and cover along the marginal areas of the Calhoun Refuge. Weeds have made a big growth all around the margin areas. There are also lots of small grains close to margin areas which will feed lots of birds.

The Batchtown Refuge has lots of food and cover for upland game birds. The cover is very heavy, and there is sufficient food to support lots more birds.

C. Big Game Animals:

Deer in the Calhoun Refuge are being observed by parties living close to the refuge. The usual numbers of signs are showing up, and some young were observed during the period. They are apparently increasing in this area.

The Batchtown Refuge has plenty of deer signs on it too and they are apparently increasing here. Three young deer were reported seen during this period.

D. Fur Animals:

(a) Muskrats:

Muskrat signs are up in the Calhoun Refuge. Also in areas like Stump Lake and Calhoun Point muskrat populations are looking good. The State of Illinois closed the trapping season on Stump Lake, and this species has increased in this area.

The Batchtown Refuge has a goodly number of muskrats but there are not nearly the muskrats in this area as in Pool 26. The low feed conditions probably are a big factor in holding them down here. There is no increase here, and numbers are about the same as last year.

(b) Mink:

The mink signs are showing up very good in Pool 26 and Calhoun Refuge. The increase in muskrat population probably is a big factor in the increase in this species.

The Batchtown area is looking fair for mink. Several signs have been observed, and farmers living adjacent to the refuge reported seeing a good number of this species. We no doubt have some increase here.

(c) Beaver:

Beaver signs are about the same in the Calhoun Refuge as last year. The Portage Island area has a good number of beaver using it. Over-all numbers are about the same as last year.

The Batchtown closed area has some increase, and more signs are showing up in the Refuge. New houses were observed this year, and it would appear that we have an increase here.

(d) Skunk:

The skunk population on the Calhoun Refuge is very low. Not many signs are observed in this area because of the low, unsuitable lands around the refuge.

The Batchtown Refuge has a good number of skunk using this area, and some dens were observed. The type of land is good for this species. We probably have some increase on this species at Batchtown.

(e) Raccoon:

Raccoon signs are plentiful in both areas and throughout the bottomlands on both rivers. Farmers are complaining of damage done by raccoon on cornfields adjacent to river bottoms. This species is increasing in both areas.

(f) Foxes:

Foxes are up from last year. More signs have been observed this year compared with the same period last year. Two dens were observed on the Batchtown Refuge with signs of lots of use.

E. Predaceous Birds:

Red-tailed hawks were observed on both areas in fair numbers. An estimated 50 birds use each area. No increase was noted in this species.

Owls are plentiful in timber areas of the two refuges and we may have a little increase in this species.

At the start of this period most all eagles had left the area.

F. Fish:

Fish are plentiful in both areas. The State of Illinois thinks we have too many game fish. At any rate, the lakes and sloughs seem to have plenty in them. The commercial fishermen are bringing in big numbers of rough fish and are keeping the market flooded most of the time. Lots of catfish in both areas.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

The Calhoun Refuge, including Portage Island, has been reconditioned, signs replaced where needed, and lines cut out through timber areas. Lots of lines were sprayed with 2-4-5-T through timber area on Calhoun Refuge. Hedge posts were put in place of steel posts. The hedge posts were obtained from cutting out a road through timber. The hedge posts were painted orange so they could easily be observed from any angle.

The Batehtown area was also reconditioned and new signs were replaced where needed. Several posts were lost along the river boundary, and they were replaced. Some of the boundary was sprayed with 2-4-5-T, and the road leading out into the refuge also was sprayed.

The posting is all done in both areas. They will be checked again for possible reconditioning before the duck season starts.

B. Plantings:

1. Cultivated Crops:

There were 17 cooperative farming agreements in force during this period. Most of the farmers got their crops in according to plan except Mr. Johnes on the Batehtown area and some of the land that was cleared on both areas, due to no fault of the sharecropper. The heavy rains during the planting season keep the farmers out of these areas. Most of the crops look good. The Government share this year was put into crops that we will let stand in the fields, such as millet, buckwheat, milo, clover, and wheat for browse. A test field of ten varieties of northern corn was planted as follows: Kodak 208, Morden 77, Kingscrot KC-3, Wisconsin 255, Wisconsin 240, Wisconsin 355, Wisconsin 464A, Pride Px 301, Wisconsin 641AA, Kingscrot ES-4. Most of this corn is matured and will be available for use by ducks and geese. This corn was planted in strips of different widths, with wheat to be planted in between for browse. This should give the geese a wonderful feeding ground. During the feeding season we expect to watch the test field to see which type of corn should be planted in the future.

VI. PUBLIC RELATIONS

A. Recreational Use:

The boating in this area is increasing each year. More boats of all kinds were observed during this period than any other year. The rivers were jammed with boats on Saturdays and Sundays.

This was a good season for swimming. A good number of people were observed using sand bars on the rivers. Lots of picnicking by fishermen and others throughout the period.

The following table shows a comparison of recreational use on the two refuge, compared with the same period in 1955:

Refuge	Fishing		Days Use for Period Miscellaneous		TOTAL USE	
	1955	1956	1955	1956	1955	1956
Batchtown	10,000	14,300	5,875	3,575	15,875	17,875
Calhoun	30,500	21,300	21,250	9,550	51,750	30,850
TOTALS	40,500	35,600	27,125	13,125	67,625	48,725

B. Refuge Visitors:

May 23-24: Superintendent Steele and Mr. Winslow here to inspect the two refuges.

June 6-7 : Dr. Green here going over farm plans and contacting the local SCS man re preparation of a farm plan.

August 1 : Illinois Biologist Paul Vidal re fish conditions, etc.

August 8 : Superintendent Steele and Dr. Green inspected the refuges and checked over the croplands.

August 18: Asst. Regional Refuge Supervisor Clair Rollings and Dr. Green, Wildlife Management Biologist, here inspecting the refuges and going over office records, etc.

D. Hunting:

The squirrel season opened August 1, but the weather was so hot that very little pressure was observed and results were poor. Better results were reported the last part of August. The hunting is done on land turned over to the State. We do not allow hunting on the refuge.

E. Fishing:
Sport:

The sport fishing was down this period as the weather was hot and lots of rain seems to hold the fishermen back. At times, however, the results were good. Bluegill and bass were the biggest catches. Fishermen are looking forward to cooler weather for better fishing.

Commercial:

The commercial fishing has been very good through this period. They keep the market flooded most of the time. Fishermen report they have had a pretty good season. Lots of catfish were taken during this period and they bring the most price.



Ray C. Steele, Superintendent

September 15, 1956

(Sgd.) R. W. Burwell

3 -17522
 Cont. No.
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

MONTHS OF May TO August, 1956

REFUGE Batchtown

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	25	25			50	100	100	100	4,540	2	18
Black									700		
Gadwall											
Baldpate											
Pintail											
Green-winged teal						50	100	200	7,390		
Blue-winged teal									2,800		
Cinnamon teal									10,760	5	51
Shoveler	100	100	5	10	100	150	190	150			
Wood											
Redhead											
Ring-necked									2,100		
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
TOTAL DUCKS	125	125	5	10	150	300	390	450	28,070	7	72
Coat:									2,310		
					(over)						

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	:	:	:	Principal feeding areas <u>Batchtown closed area</u>
Geese	:	:	:	
Ducks	<u>28,070</u>	<u>1,225</u>	<u>72</u>	Principal nesting areas <u>Via. of Maryland road</u>
Coots	<u>2,310</u>	:	:	
				Reported by <u>Edward A. Davis</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-175
Form N
(Rev. March 1953)

WATERFOWL

MONTHS OF May TO August, 19 56

REFUGE Calhoun

	(1)	(2) Weeks of reporting period								
Species	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter										
Geese:										
Canada										
Cackling Brant										
White-fronted Snow		40								
Blue Other		30								
Ducks:										
Mallard Black Gadwall	30		20	20	20	25	30	50	50	90
Baldpate Pintail	100									
Green-winged teal Blue-winged teal Cinnamon teal Shoveler Wood Redhead Ring-necked Canvasback Scaup Goldeneye Bufflehead Ruddy Other	2,000 1,000 100 500 	200 100 100 100 		100 100 	100 100 	100 100 	100 100 	100 100 	125 125 	125 125
TOTAL DUCKS	3,750	590	180	120	120	125	190	190	175	195
Coots:	300	100	50							

3 -17-53
 Cont. No.
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE		MONTHS OF								TO		19	
Calhoun		May								August		56	
(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total			
	11	12	13	14	15	16	17	18					
Swans:													
Whistling													
Trumpeter													
Geese:													
Canada													
Cackling													
Brant													
White-fronted									200				
Snow									210				
Blue													
Other													
Ducks:													
Mallard	50	50	75	75	100	100	100	100	7,245	4	48		
Black													
Gadwall									700				
Baldpate													
Pintail													
Green-winged teal					50	75	125	200	18,900	2	32		
Blue-winged teal	10	10	20						7,700				
Cinnamon teal									14,175	8	144		
Shoveler													
Wood	125	100	100	100	100	125	125	200					
Redhead													
Ring-necked									4,590	2	32		
Canvasback													
Scaup	10	10	20										
Goldeneye													
Bufflehead													
Ruddy													
Other													
TOTAL DUCKS	195	170	215	175	250	300	350	500	53,270	16	256		
Coot:			50	50	50	50	50	50	5,250				
				(over)									

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans				Principal feeding areas <u>Swan Lake</u>
Geese				
Ducks	<u>53,270</u>	<u>3,750</u>	<u>256</u>	Principal nesting areas <u>Swan Lake and Vic.</u>
Coots	<u>5,250</u>			
				Reported by <u>Edward A. Davis</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Batahoun Months of May to August 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Noron	25	5/7	400	8/16	100	8/31				400
Egrets	50	5/7	3,000	8/16	500	8/31				3,000
II. Shorebirds, Gulls and Terns:										
Gulls	100	5/7	100	5/7	25	5/20				200
Terns	150	5/7	150	5/7	20	5/20				300

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons: Mourning dove White-winged dove					
IV. Predaceous Birds: Golden eagle Duck hawk Horned owl Magpie Raven Crow	Lots of crows here the year round.				
Reported by <u>Edward A. Davis</u>					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Calhoun Months of May to August 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Avocets	25	5/7	850	8/16	100	8/31	1	200	200	850
Egrets	90	5/7	3,000	8/16	500	8/31	1	200	200	3,000
II. <u>Shorebirds, Gulls and Terns:</u>										
Gulls	100	5/7	100	5/7	20	5/20				300
Terns	200	5/7	200	5/7	25	5/20				400

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons: Mourning dove White-winged dove					
IV. Predaceous Birds: Golden eagle Duck hawk Horned owl Magpie Raven Crow	Lots of crows here the year round.				
				Reported by..... Edward A. Davis	

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752

Form No. 2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Bartlett Months of May to August, 1956

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total		Hunting	For Re- stocking	For Research		
Quail	Timber, scrub brush, weed patches	30	3	30	60-40				200	Pertinent information not specifically requested. List introductions here. 3 broods were observed with about 10 birds in breed.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form 4-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Calhoun Months of May to August, 1956

(1) Species Common Name	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Quail	Timber, brush, cornfields and weed patches	25	4	10	50 - 90				200	Four broods were observed with an av. 10 birds to the brood.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

1956

CALHOUN AND BATHTOWN REFUGES
NARRATIVE REPORT
SEPTEMBER, OCTOBER, NOVEMBER, DECEMBER, 1956

I. GENERAL

A. Weather Conditions:

The maximum temperature was lower in September, but the minimum temperature was higher. October had higher maximums and minimums than last year. November had a lower maximum reading but had a higher minimum reading than last year. December had a higher reading in both maximum and minimum readings. The weather was unusual during the hunting season. Most days were cloudy and foggy, and there were several days with high winds.

Relative readings are shown below:

Month	Year	Maximum	Minimum	Precipitation
September	1955	102	40	2.59
	1956	100	42	1.90
October	1955	85	33	4.26
	1956	89	35	.51
November	1955	93	11	1.23
	1956	80	13	3.12
December	1955	67	7	.11
	1956	68	16	4.00
1955 TOTAL				8.22
1956 TOTAL				8.56

B. Water Conditions:

The river stage in Pool 26 was unfavorable this year. There was a big draw-down in all four months, with December the worst month. Two days after the duck season the pool was restored to near pool stage. Pool 25 was at a good stage all season.

A comparison of pool levels in Pool 26, compared to the same period in 1955, is shown in the following table:

Month	Year	High	Low	Difference
September	1955	15.4	14.8	.6
	1956	15.5	14.7	.8
October	1955	15.8	14.7	1.1
	1956	15.3	14.8	.5
November	1955	15.4	15.3	.1
	1956	15.2	14.3	.9
December	1955	15.4	14.7	.7
	1956	15.3	13.9	1.4

Maximum monthly variation in 1955 was 1.1, compared with 1.4 in 1956.

II. WILDLIFE

A. Migratory Birds:

1. Populations and Behavior:

a. Ducks:

Batehtown Refuge

As the period opened there were 2,900 ducks present on Batehtown Refuge, with 2,000 of these being blue-winged teal, together with 100 mallards, 100 baldpate, 200 pintail, and 500 wood ducks.

Numbers here did not build up much until the end of September, when 12,500 were present. There was a small movement into the area the week of October 20 and another on October 27, but it was not until the first week in November that numbers reached 20,000. The first heavy movement of the fall was noted the week ended November 24, when the population jumped to over 75,000 ducks. This number gradually increased to about 98,000 the week ended December 1, and reached the peak population for the fall the week ended December 15, when 158,300 were found. Mallards constituted the bulk of this peak, with 125,000 of this species in the total.

The concentration of ducks in Batehtown shifted up and down all season. Lots of birds using the refuge ranged back and forth from the Sny Bottoms and the St. Charles Bottoms.

More favorable water levels in Pool 25 no doubt contributed to increased use of the refuge this fall, compared to 1955. The peak then amounted to only 82,000 ducks, or only about half as many as the peak this fall. Total waterfowl

use of Batehown Refuge this fall amounted to 5,032,300 days, compared to 2,130,695 days a year ago; representing an increased use of over 136% over the fall of 1955.

Mallards, always the most common species in this area, accounted for 3,588,200 use days, or 71.30% of all use recorded this fall.

Calhoun Refuge

The period opened on Calhoun Refuge with 5,700 ducks, including 5,000 blue-winged teal present. Numbers did not build up until the latter part of October. The week of October 20 had a small movement into the area, followed by another the week of October 27. November 3 showed an increase of about 10,000 ducks, and the numbers doubled the following week.

The first big flight of the season occurred the week ended November 24, and the population rose to 335,300, of which 300,000 were mallards. Numbers dropped the next week, but a new flight on December 8 started another upswing in the population, leading to the peak for the season the week ended December 15, when 531,100 were present (including 500,000 mallards).

This fall's peak arrived a week later than it did in 1955. At that time the peak of 714,800 was recorded, so this fall the peak was not only a week late but also 183,700 less than in 1955. It is believed that this drop may be due at least in part to warm weather and low water in Pool 26.

Ducks did not pile up in Calhoun Refuge to the extent they normally do, and weather is no doubt a big factor in this. Neither did ducks feed in the refuge fields nor in peripheral private fields as much as they have in the past.

During the first part of the season ducks concentrated in Swan Lake. Later, when the water level in Pool 26 dropped, ducks shifted back and forth to other areas to feed, mostly in the St. Charles Bottoms.

During several of the flights occurring here this fall large numbers of ducks moved right on through and did not stop in the area. Again weather and low water conditions may have been a major cause.

Hunters reported that ducks were much harder to decoy this fall than for many years, and many hunters were not too happy with the season.

Once the population reached in excess of 100,000 birds the week ended November 17, the numbers did not drop below that level, and at the close of the period there were still 302,600 present on the refuge.

Although there was a pronounced drop in peak numbers, the actual use made of the refuge was essentially the same. This fall a total of 18,133,325 use days were recorded for the refuge, compared to 21,504,875 use days last year. This represents a drop of only 15.6%, compared to drop in peak populations of 26%.

Mallards, normally the most abundant species, peaked at 500,000 this fall, compared to 700,000 a year ago, for a drop of 28.5%. Use days by mallards also showed a decided drop from 19,735,100 a year ago to 15,332,800 this year, for a decreased use of 4,402,300 use days, representing a loss of 22.3%.

Had it not been for increased use by blacks, baldpates, pintails, and wood ducks, the total use would have taken an even sharper drop.

When the Illinois waterfowl season opened on October 13 there were only 35,000 ducks to greet them in the vicinity of Calhoun Refuge, and 8,300 at Batchtown. Peak populations on both refuges occurred prior to the close of the season, however.

A comparison of peak numbers of the two refuges for the past six seasons is shown in the following table:

Refuge	1951	1952	1953	1954	1955	1956
Batchtown	49,400	192,000	1,001,800	162,400	82,200	158,300
Calhoun	321,000	478,000	303,000	614,100	714,800	531,100

A comparison of duck day use for the past two fall seasons is shown in the following table:

Refuge	DUCK DAY USE TABLE		Per cent change
	1955	1956	
Batchtown	2,130,695	5,032,300	136.00+
Calhoun	21,504,875	18,133,325	15.60-
TOTALS	23,635,570	23,165,625	.19-

Coots peaked at 8,000 birds the week ended October 20, and made 212,100 days use of Batchtown Refuge; and peaked at 40,000 the week ended October 27, with 834,050 days use at the Calhoun Refuge.

b. Geese:

Canada Geese

Canada geese did not show up on Batchtown Refuge this fall until the week ended October 20, when 75 were observed. On Batchtown Refuge this species peaked at 300 birds the week ended December 22, and made a total of 5,950 days use of the area.

On Calhoun Refuge Canadas arrived the week ended September 15, when 60 were observed. This was two days earlier than the first arrival of 25 last year. This species peaked at 3,000 the week ended December 15, and made a total of 105,805 days use of Calhoun Refuge. As the period ended there were still 1,000 Canadas present.

Snow Geese

At Batchtown Refuge snow geese were first observed the week ended November 10, when 50 arrived. The species peaked at 500 the week ended December 22, and made a total of 5,950 days use of the area.

On Calhoun Refuge the first snows were seen the week ended October 13, when 75 arrived. The number built up to 2,000 the first of November and held at about that number throughout the period. Snows peaked on Calhoun the week ended December 22, when 4,000 were present, and they made 154,525 days use of the area. As the period closed 2,000 were still present on the refuge.

Blue Geese

The first blue geese arrived at Batchtown the same time as the snows did (the week ended November 10) and the same number (50) were found. They were there for only three weeks, and then after an absence of three weeks the peak of the fall occurred the week ended December 22, when 600 were found. Blue geese made a total of 7,359 days use of Batchtown Refuge.

At Calhoun Refuge blue geese arrived with the snows the week of October 13, and were present in fair numbers throughout

the rest of the period. This species peaked at 5,000 the week ended December 22, and made a total of 189,525 days use of the refuge. There were still 3,000 present as the period ended.

Total goose use for both refuge areas is shown in the following tables:

TOTAL GOOSE USE						
Refuge	Canada		Snow		Blue	
	Peak	Days Use	Peak	Days Use	Peak	Days Use
Batchtown:	300	5,950	500	5,950	600	7,350
Calhoun	3,000	105,805	4,000	154,525	5,000	189,525

GOOSE DAY USE			
Species	Batchtown	Calhoun	TOTAL
Canada	5,950	105,805	111,755
Snow	5,950	154,525	160,475
Blue	7,350	189,525	196,875
TOTALS	19,250	449,855	469,105

An estimated 5 Canada geese were killed in the vicinity of Batchtown Refuge, and 27 were killed in the vicinity of Calhoun Refuge this fall.

c. Shorebirds:

Wilson snipe seemed to show an increase in both areas this period over last year. An estimated 1,500 used the Calhoun Refuge as compared to 1,000 in the area last year. None of these birds were observed killed during this season.

The Batchtown area had an estimated 800 birds as compared with 700 last year. Killdeer and plover showed up in good numbers in both areas. An estimated 4,000 birds used the area as compared to 3,000 last year.

d. Egrets:

Egrets were plentiful in September and October, and two or three birds were in each area as late as December 21. The peak concentration was September 25, with a population of 7,000 birds as compared to 6,000 birds last year.

2. Food and Cover:

Food conditions were very good in Pool 26 this year. Sago was abundant in Swan Lake, and the ducks made good use of it until the draw-down of the pool, which left a lot of the sago on mud flats where ducks did not get at it. There was an abundance of American pondweed in Swan Lake this year. We had a big population of coot that ate a lot of this food, which helped to run the food low in this area. There is plenty of corn left in the refuge fields as none was knocked down until after the duck season was over. The ducks and geese did not use the short corn type during the season and have not used it yet. The adjacent cornfields have plenty of corn to maintain a big number of ducks all winter. The food conditions in Pool 25 were not considered good this year, but the water conditions were good in this area all season.

The cause of the food failure in this area was the manipulations of the dam. The pool was low at the start of the growing season for smartweed. By the time the smartweed growth reached about 6", water levels were raised and the smartweed was killed out. Food conditions in Pool 25 were considered very low. Adjacent cornfields played a big part in taking care of the ducks in this area.

B. Upland Game Birds:

Upland game birds were observed in the marginal areas of Calhoun Refuge, where there was plenty of food and cover to maintain several birds. An estimated 125 quail used this area. The dry weather during the last four years has been a factor in upland game birds using the Calhoun Refuge.

On the Batchtown Refuge, where there is more high ground, there are an estimated 150 quail as compared with 125 estimated last year. In this area there is plenty of food and cover to maintain a good number of this species. The low water during the past years has also been a factor for quail using this area.

C. Big Game Animals:

The deer population in Calhoun Refuge seems to be on the increase. About 20 deer are using this area as compared to about 12 last year.

The Batchtown area seems to be on the increase also. About 15 deer are using this area as compared to about 12 last year.

D. Fur Bearers:(a) Muskrat:

The muskrat population in Calhoun Refuge and adjacent to the refuge looks the best since we have started the refuge.

The stump lake area adjacent to the Calhoun Refuge has a very large number of muskrat houses in it this fall. The State is keeping it closed this year, and this should increase this species in all the areas. The trapping pressure is not bad in this area. A few are trapping along the river boundaries and are doing very good.

The Batchtown area does not show much increase over last year. Most of the muskrats in this area are bank rats, and it is hard to tell how many we have. It is believed they are about the same as last year.

(b) Mink:

Mink are on the increase in both areas this fall. Several were observed during the season, and a goodly number have been caught by trappers this fall. The increase may be partly due to the increase in the muskrat population.

(c) Skunk:

Skunk are still on the increase in the Batchtown Refuge. Farmers who work in this area report seeing a good number of this species.

In the Calhoun Refuge there have been none observed, but probably some are present.

(d) Beaver:

Beaver signs in the Batchtown area are increasing very fast.

There seems to be no increase in the Calhoun Refuge as several places seem to be deserted. The trapping pressure is low on this species as the price of fur is very low. This should keep this species on the increase.

(e) Otter:

No signs of otter have been seen on either area.

(f) Raccoons:

Raccoons are plentiful on all the bottomlands. This species is increasing in both areas. There has been more pressure on this species than other years as several of the hunters are going after them for sport and food. One hunter reported catching 32 in one night. The price is only \$1.00 per hide.

(g) Foxes:

Foxes are up in both areas this fall. More of them have been observed this year than last year. Trappers report they are catching them in good numbers.

E. Predaceous Birds:

Eagles are numerous in Calhoun and Batehtown Refuges, but not as high as last year. There are an estimated 50 eagles in Calhoun Refuge as compared to 100 last year.

The Batehtown Refuge has about 30 eagles as compared to 50 last year.

Hawks are common in both areas. Red-tail and marsh are in the majority. They seem to be on the increase in both areas. Two red-tailed and one marsh hawk were found dead, shot by duck hunters.

Owls are common in the timber areas, and may show a small increase as compared to last year.

F. Fish:

Fish are plentiful in both Calhoun and Batehtown areas. Sport fishing was very good this fall, especially bass and crappie. Lots of good strings were observed, and fishing was done all through the duck season.

Commercial fishermen report carp and buffalo catches good, but the channel catfish run was not as good as last year.

III. REFUGE DEVELOPMENT AND MAINTENANCE

B. Plantings:

4. Cultivated Crops:

REPORT ON SHORT EAR CORN CALHOUN REFUGE

Yield Per Acre

It was not possible to arrive at a definite yield per acre on any of the 10 different varieties of short corn planted on Calhoun Refuge this year because none of the corn was harvested. Yield had to be estimated in the field, and while it is not an exact yield figure, it will serve to give some indication of the yield.

The following table shows estimated yield per acre for each of the 10 varieties used on Calhoun Refuge (Note: Regular varieties of hybrid corn planted on similar ground for the permittee's share of 50 bushels per acre or less, largely as the result of a dry growing season.):

<u>Variety</u>	<u>Estimated Yield</u>
PW 21	25 bu. per acre
Kingscrest KS-4	25
Wisconsin 355	30
Norden 77	30
Wisconsin 240	35
Nodak 208	20
Wisconsin 255	35
Wisconsin 464 A	35
Kingscrest KC-3	35
Wisconsin 641 AA	40

Availability of Standing Corn to Feeding Geese

Based on the assumption that geese can feed standing corn to a height of 33", it must be assumed that all of the short ear corn would be available. None of the 10 varieties planted had an average ear height of over 34", while most of them were below this figure. Average height of ears at point of attachment for the different varieties are shown in the following table (Note: After the ears dropped, many of them on all varieties nearly touched the ground, so geese would have no difficulty in feeding):

Average Height of Ears

Variety	At point of attachment to stalk
Pride PN 21	28 inches
Kingscrost KB-4	34
Wisconsin 355	34
Norden 77	28
Wisconsin 240	24
Nodak 208	15
Wisconsin 255	30
Wisconsin 464-A	30
Kingscrost KB-3	18
Wisconsin 641-AA	30

Method of Planting

All 10 varieties were planted in a large unit on the south side of Swan Lake, with varying widths of corn strips, in which were interspersed strips of beans. When the beans were harvested, wheat was planted in the strips to afford browse for geese. At this writing, all wheat has come up and is an excellent potential source of browse.

Corn was planted in standard width rows, according to the layout (starting at the southeast corner of the tract and running westerly):

1. 10 rows of Pride PN 21
28 ft. strip of beans.
2. 6 rows of Kingscrost KB-4
38 ft. strip of beans
3. 8 rows of Wisconsin 355
28 ft. strip of beans
4. 8 rows of Norden 77
48 ft. strip of beans
5. 12 rows of Wisconsin 240
28 ft. strip of beans.
6. 12 rows of Nodak 208
38 ft. strip of beans

7. 12 rows of Wisconsin 255
28 ft. strip of beans
8. 12 rows of Wisconsin 464-A
28 ft. strip of beans
9. 12 rows of Kingcroft KC-3
28 ft. strip of beans
10. 12 rows of Wisconsin 641-AA
50 ft. strip of beans

From the end of this 50 ft. strip of beans, the remaining seed from the different varieties were planted in a large field of solid standard width strips.

Lack of utilization to date makes it impossible to evaluate the effect of the different width strips, to determine whether they are too wide or too narrow. This will be closely watched once geese start using the field, and we will make any amendments in strip width which utilization observations indicate.

Utilization

At this writing, there has been no utilization of any of the short corn or of the wheat browse in the intermediate strips. However, we are not too concerned yet, because for some reason there has been little utilization of any fields either on or off the refuge in the vicinity of Swan Lake fields. Last year both geese and ducks used the fringe of Swan Lake earlier in the fall, but it is believed that weather conditions so far this fall have been such that birds have not needed to use the fields adjoining Swan Lake. It is believed that when it freezes up these fields will be used as they have in the past, and when that happens we will be in position to determine the effectiveness of the short ear corn and intermediate strips of browse plantings.

Lack of utilization makes it impossible to determine the best variety of corn to use. Once utilization occurs, observations on preferences, if any, will be carefully noted so that we may select the best possible varieties in future plantings.

General Statements

If we do not get utilization of the short ear corn during the open waterfowl season, there appears to be little use

in growing short ear corn since it has a lower yield than regular varieties and since the short ear qualities have no particular value except to afford feed without manipulation during the hunting season. If experience in the future is the same as this year, and the fields are not fed until after the hunting season, then we might as well use high-yielding hybrids to produce a greater supply of food. It is realized that this year was unusual, in that no fields in this vicinity have been utilized until the past few days. Thus, we cannot say that short ear corn has no value in this area until we go through additional seasons until we do have early fall use of the fields. It might be pointed out that neither have regular fields on the permittee's share, nor on adjoining private land, been used very much in the vicinity of the refuge fields until recently, even though some private fields have been picked and there is considerable waste corn on the ground. Until recently birds apparently preferred to range greater distances to feed so long as the weather remained mild. Once the area freezes up, birds will probably feed closer in as they have during freeze-ups in the past.

However, we wish to project the thought that if short ear fields are not used during the hunting season, so that corn can be knocked down, then there is no particular advantage of growing short ear corn to knock down instead of higher yielding hybrids.

By January 6, 1957 there had been no utilization of the short-ear corn to this date. The fields have been too soft for the permittee to knock down. As soon as it freezes up he will do so in hope of getting some utilization of the crop.

Farm Plan

Will be unable to send in a farm plan at this time as Mr. Nelson of the Soil Conservation Service cannot get us a plan ready for this period. It is recommended that this spring we make a test of all the soil on the sharecropping lands to see what fertilizer, if any, we need.

VI. PUBLIC RELATIONS

A. Recreational Uses:

Boating and picnicking were done extensively during fall in both areas and the Illinois and Mississippi Rivers.

More people are buying pleasure boats of the small type and using the rivers for week-end outings.

Considerable hunting was done on areas contiguous to the refuges and drawing their source of birds from the refuge areas. Hunting is under the management of the State of Illinois, and none is permitted on the refuges proper.

Complete determination of total hunters using the public hunting areas adjacent to the refuges has not yet been made, but will be reported in the annual report on Duck Kill and Hunter Success which will be submitted at a later date by Dr. Green. Preliminary compilations, however, indicate that there were at least 10,000 days of hunting in the vicinity of Batchtown Refuge and 15,000 days of hunting in the vicinity of Calhoun Refuge.

On the Batchtown and Calhoun Refuges proper a total of 22,700 days of recreational use, other than hunting, was made this period. This included:

Refuge	Days Recreational Use			TOTAL
	Hunting*	Fishing	Miscellaneous	
Batchtown	10,000	4,500	1,800	16,300
Calhoun	15,000	12,000	4,400	31,400
TOTAL	25,000	16,500	6,200	47,700

*Preliminary estimate of hunting in the vicinity of the refuges. A more complete report will be made later. No hunting permitted on either refuge proper.

B. Refuge Visitors:

Dr. W. E. Green was here October 10 in company with Mr. Erwin Becker and Game Agent Marshall Stinnett in regard to banding of ducks.

Superintendent R. C. Steele was here October 19 in company with Mr. Hart W. Foster checking over the refuge.

Dr. W. E. Green was here from December 7 through 11 working on bag check cards and helping gather data on short corn, etc.

Lots of hunters before the duck season and all during the season contacted the refuge manager for information on regulations and a million other things.

C. Refuge Participation:

September 17 through 19 attended a conference of Refuge personnel and Game Agents at Winona, Minnesota.

On October 11 attended a sportsmen's meeting at Alton, Illinois.

D. Hunting:

Duck hunters in Pools 25 and 26 did not have as successful a season this year as they did in 1955. Hunters complained that ducks were difficult to decoy this fall as compared to past seasons. This may be partly the result of low water during the season, together with the fact that there were many mild cloudy days. There was a lot of high shooting done in the area this fall, which interfered with good duck hunters.

Pool 25

In Pool 25 data were obtained not only from the State-Managed Public Hunting Grounds south of Batehown Refuge, but also from hunters along the Mississippi River. A total of 7,895 hunters were checked through the State Checking Station. These hunters took 9,378 ducks, for a daily average of 1.18 ducks per day. Data were also obtained from 228 hunters along the Mississippi River, who took 417 ducks, for a daily average of 1.83 ducks.

The 8,123 hunters from whom data were gathered in Pool 25 this fall had a harvest of 9,795 ducks, for an average of 1.21 ducks per day. This was considerably below the 1.58 average of 7,212 hunters in the same area a year ago.

Mallards comprised 85.13% of total checked kill in Pool 25 this fall, compared to 86.56% in 1955. Pintails were in second place again this year, but made up only 3.52% of the total checked kill, compared to 4.32% in 1955. Green-winged teal were again in third place, with 2.80% this year, compared to 1.96% a year ago; and blue-winged teal were again in fourth place, with 2.11%, compared to 1.75% in 1955.

Crippling loss averaged .18 duck per hunter day, or slightly less than the .21 loss in 1955.

It was found that 13.63% of the hunters checked had limits, compared to 22.16% last year; and that 45.03% failed to bag game, compared to 35.74% last year.

It required 5.12 hours of hunting for each duck bagged this fall, compared to 4.23 hours per duck in 1955; and the average hunt this fall amounted to 6.17 hours, compared to 6.70 last year.

A comparison of hunter success for Pool 25 for the 1955 and 1956 seasons is shown in the following table:

BAG CHECK SUMMARY - Pool 25

	<u>1955</u>		<u>1956</u>	
No. hunters checked	7,212		8,123	
No. ducks checked	11,410		9,795	
Av. ducks per day	1.58		1.21	
Species	No.	%	No.	%
Mallard	9,876	86.56	8,338	85.13
Black	22	.19	36	.37
Cadwall	49	.43	93	.95
Baldpate	35	.31	210	1.43
Pintail	493	4.32	345	3.52
O.v.teal	294	1.96	274	2.80
N.v.teal	200	1.75	207	2.11
Shoveller	13	.11	28	.29
Wood duck	34	.30	-	-
Redhead	73	.64	65	.66
Ring-neck	214	1.26	56	.57
Canvas-back	31	.27	71	.72
Scaup	195	1.71	125	1.28
Golden-eye	1	.01	3	.03
Buffle-head	14	.12	10	.10
Ruddy	5	.05	3	.03
Mergansers	1	.01	1	.01

Hunters took ducks as follows:

4 (limit)	1,598	22.16	1,107	13.63
3	514	7.13	542	6.67
2	954	13.23	925	11.39
1	1,568	21.74	1,891	23.28
0	2,578	35.74	3,658	45.03

Pool 26

Data were obtained from 11,542 hunters in Pool 26, with 9,932 ducks, for a daily average of .86 duck per day. In 1955 data were obtained from 10,892 hunters, with 10,536 ducks, for an average of .97 duck per day. Thus, it can be seen that success was lower this fall than last.

Data were gathered from several areas as follows:

Area	No. hunters	No. ducks	Av. per day
Geddes and Diamond			
Inland	93	146	1.56
Glades Area	283	693	2.45
Stump Lake	6,411	4,839	.75
Illinois River	429	398	.92
Fuller Lake	561	1,079	1.92
Calhoun Point	3,623	2,687	.74
Chickahama Slough	142	90	.63
TOTALS	11,542	9,932	.86

Crippling loss for the areas checked was 0.10 duck per day, compared to a loss of 0.13 duck per day last year.

Mallards comprised 75.62% of all ducks checked, compared to 77.71% in 1955; blue-winged teal were in second place, making up 9.05% of the checked kill, compared to 3.32% of total kill last year, when this species was also in second place; and pintail were in third spot with 5.83%.

It required 6.69 hours of hunting this fall for each duck bagged, compared to 6.24 hours in 1955; and the average hunt this fall lasted 5.76 hours, compared to 6.04 hours a year ago.

It was found that only 8.20% of all hunters checked had limits, compared to 9.00% who did in 1955; and 57.06% of all hunters failed to bag game, compared to 51.88% who were unsuccessful last year.

A summary of hunter success in Pool 26 is shown in the following table, which compares the 1955 season with the current one:

RAG CHECK SUMMARY - Pool 26

	<u>1955</u>		<u>1956</u>	
No. hunters checked	10,892		11,512	
No. ducks checked	10,514		9,932	
Av. ducks per day	.97		.86	
Species	No.	%	No.	%
Mallard	8,398	79.71	7,510	75.62
Black	58	.55	69	.69
Gadwall	170	1.61	128	1.29
Baldpate	121	1.15	137	1.38
Pintail	308	2.92	579	5.83
C.v.teal	221	2.10	355	3.57
B.w.teal	350	3.32	899	9.05
Shoveller	133	1.26	83	.84
Wood duck	197	1.87	-	-
Redhead	92	.87	25	.25
Ring-neck	129	1.22	27	.27
Canvas-back	11	.11	14	.14
Scaup	336	3.19	93	.94
Golden-eye	2	.02	2	.02
Buffle-head	7	.07	1	.01
Ruddy	-	-	10	.10
Mergansers	3	.03	-	-

Hunters took ducks as follows:

4 (limit)	980	9.00	946	8.20
3	634	5.82	513	4.70
2	1,087	9.98	1,052	9.12
1	2,510	23.32	2,415	20.92
0	5,651	51.88	6,586	57.06

The goose kill was low on the Meyer farm this year. About 15 blues and snows were taken there. There were also a few killed on adjacent farms.

Along the Illinois River boundary between Swan and Gilbert Lakes an estimated 27 Canada geese were killed this fall, compared to only 20 killed there a year ago.

E. Fishing:

Pole and line fishing was very good up to November 21 due to the open weather we had all fall. Several good catches of bass and crappies were observed.

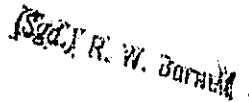
Commercial fishermen had a very good season although not quite as good as last year. Fishermen reported the catfish run was not as good as last year. The low water might have changed this. Carp and buffalo were caught in good numbers. The price and demand are good in this area, which is close to a big metropolitan area. The usual number of fish peddlers were observed in the area. Commercial fishermen enjoyed open water all during the period.

F. Violations:

Three cases were settled in State court with total fines of \$325.00. The costs in the cases amounted to \$12.00. All fines were paid after a plea of guilty. Two violators were arrested for hunting in the refuge at Batchtown. They were from out of State. Several were warned along the edge of the refuge. Considering the large number of hunters using the area, I am well pleased with the respect they seem to have for our refuges.


Ray C. Steele, Superintendent

January 26, 1957


R. W. Barnard

(2) Status of Goose Flock:

No captive goose flock on either refuge.

(3) Public Use:

Summary of Recreational Use
Calendar Year 1956

Use	Estimated Days Use					
	Spring		Summer		Fall	
	Batehtown	Calhoun	Batehtown	Calhoun	Batehtown	Calhoun
Hunting:	-	-	-	-	10,000	15,000*
Fishing:	2,000	4,300	14,300	21,300	4,500	12,000
Misc. :	425	850	3,575	9,550	1,800	4,400
TOTALS :	2,425	5,150	17,875	30,850	16,300	31,400

TOTAL USE SUMMARY

Refuge	Hunting*	Fishing	Miscellaneous	TOTAL
Batehtown	10,000	20,800	5,800	36,600
Calhoun	15,000	37,600	14,800	67,400
TOTALS	25,000	58,400	20,600	104,000

*Note: No hunting is permitted on either refuge proper. Hunting is shown for contiguous areas where hunting is furnished because of the ducks held in the areas. All hunting in this portion of the river is under control of the State of Illinois.

Data on hunting pressure are not complete at this writing. More complete data will be supplied in the annual report of "Duck Kill and Hunter Success" by Dr. Green at a later date.

(4) Use of Herbicides:

Herbicides were used on Batchtown and Calhoun Refuges this year for the control of brush along boundary lines and roads, together with some spraying to control brush cut off near Schoolhouse Lake in the SW corner of Swan Lake.

Both 2 4 D and T 4 5 were used in this control, which was used on willow, poison ivy, ironweed, maple, osage orange, oak, grape vine, and buttonbush, having an average height of 2 to 6' when the leaves were fully developed. Much of the brush sprayed was overtopped by willow and maple having a density of about 5%.

Application was made on July 5, July 17, July 24, and August 6, 1957 from about 10 a.m. through mid-afternoon, with temperatures between 80 and 90° and with mild winds up to 10 miles per hour but usually with velocities below 5 miles per hour.

Application was made with hand sprayers and with a power sprayer mounted on a jeep, which was made available by D. O. Rettinger of the Illinois Department of Conservation. An estimated 8 acres were treated.

Application was at the rate of 200 pounds of mixture per acre, with 1/2 gallon of herbicide per 50 gallons of water. The estimated cost of herbicide was \$51.00 for all the spraying done this year, and it took 34 hours to make the treatments. Cost per acre was \$6.00.

With the exception of the road forming the boundary through the woods in the NE corner of Swan Lake, which received two treatments, single treatments were used elsewhere.

The first symptoms of lethal effect were noted the day following treatment, when treated plants started turning brown.

Following the first treatment, kill was estimated at 75%, with about a 75% regrowth and sprouting.

Along the Calhoun road (NE corner of Swan Lake) a second treatment was made, resulting in 95% kill, which was sufficient to keep the road open for travel.

Following treatment, oak and buttonbush were the principle plants to appear.

(5) Goose Browse Preference:

Winter wheat. No varieties available. Most browsing was done during the fall on private lands. Very little use was made of the refuge fields.

(6) Predaceous Birds:

Bald eagles are common on both the Batchtown and Calhoun Refuges, although not quite as numerous as last year. There are about 50 of these birds on Calhoun, compared to 100 last year; and 30 on Batchtown, compared to 50 last year.

Hawks are common on both areas, with red-tailed and marsh hawks the most common. Both of these species appear to have increased. During the fall two red-tailed hawks and one marsh hawk were found shot by duck hunters.

Owls are common in the timbered areas and may show a small increase over last year.

3-1750
Form NR
(Rev. March 1953)

WATERFOWL

REFUGES Nebraska

MONTHS OF September TO December, 19 56

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada							75	100	200	75
Cackling										
Brant										
White-fronted										
Snow										50
Blue										50
Other										
Ducks:										
Mallard	100	200	500	800	1,000	2,000	3,000	4,000	8,000	8,000
Black			100	200	200	100	200	100	300	100
Gadwall			100	200	300	100	200	100	500	200
Baldpate	100	300	300	400	500	300	500	300	1,000	500
Pintail	200	300	2,000	5,000	5,000	2,000	4,000	3,000	6,000	300
Green-winged teal						100	200	100	200	400
Blue-winged teal	2,000	2,500	4,000	5,000	6,000	3,000	2,000	1,000	500	100
Cinnamon teal										
Shoveler						100	100	100	200	200
Wood	500	500	600	700	1,000	500	400	500	600	200
Redhead									100	
Ring-necked									300	3,000
Canvasback									100	200
Scaup			200	200	100	100	200	300	400	3,000
Goldeneye										
Bufflehead										
Ruddy									200	
Other										
TOTAL DUCKS	2,900	3,800	7,800	12,500	14,100	8,300	10,700	9,500	20,400	16,000
Coots:						5,000	8,000	3,000	5,000	3,000

3-1750a
Cont. NP
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Establim MONTHS OF September TO December, 19 56

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total
	11	12	13	14	15	16	17	18		
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	50	100				300			5,990	
Cackling										
Brant										
White-fronted										
Snow	100	200				500			5,990	
Blue	200	200				600			7,350	
Other										
Ducks:										
Mallard	30,000	50,000	75,000	80,000	125,000	75,000	90,000		3,500,000	
Black	300	500	500	500	2,000	1,000	500		16,000	
Gadwall		1,000	1,000	1,000	1,000	200			11,300	
Baldpate	100	5,000	6,000	5,000	5,000	500			194,400	
Pintail	1,000	10,000	10,000	3,000	4,000	2,000	1,000		111,600	
Green-winged teal	300	1,000	500	600	2,000	1,000	500		18,300	
Blue-winged teal	100								183,100	
Cinnamon teal										
Shoveler	200	1,000	300	200	500	300	200		23,100	
Wood	200					1,000			16,900	
Redhead	100	500	300	400	3,000	1,000	1,000		14,000	
Ring-necked	1,000	2,000	1,000	500	3,000	2,000	500		93,100	
Canvasback	500	1,000	500	600	8,000	5,000	2,000		124,400	
Scaup	5,000	3,000	2,000	1,000	4,000	2,000	1,000		154,800	
Goldeneye			200	200	200	200	200		7,000	
Bufflehead		100	100			100	100		2,800	
Ruddy			200	300	600	600	100		2,100	
Other ducks		300	300	300	600	600	100		17,500	
TOTAL DUCKS	36,800	75,100	97,800	93,300	158,300	91,900	57,100		5,031,900	
Coot:	3,000	2,000	1,000	100	100	100			212,100	

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans				Principal feeding areas <u>Natural swamps in refuge, also in refuge fields, and in cornfields in the vicinity and within 50 miles.</u> Principal nesting areas _____
Geese	19,850	1,400		
Ducks	5,032,300	152,300		
Coots	212,300	8,000		
				Reported by <u>E. A. Davis</u>

INSTRUCTIONS (See Secs. 7531, through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1750
Form NR
(Rev. March 1953)

WATERFOWL

REFUGE Calhoun

MONTHS OF September TO December, 19 56

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada		60	25	30	150	150	500	1,000	1,500	1,000
Cackling										
Brant										
White-fronted						75	600	2,000	2,000	1,200
Snow						75	400	1,000	1,000	1,300
Blue										
Other										
Ducks:										
Mallard	300	300	800	1,000	3,000	6,000	8,000	9,000	12,000	75,000
Black	25	25	50	100	200	300	300	400	500	500
Gadwall			100	100	300	500	700	800	1,000	300
Baldpate	75	100	300	500	700	2,000	5,000	7,000	10,000	700
Pintail	100	200	1,000	8,000	9,000	9,500	10,000	12,000	20,000	3,000
Green-winged teal						3,000	3,000	1,000	1,000	2,000
Blue-winged teal	5,000	7,000	8,000	9,000	9,000	10,000	8,000	4,000	2,000	200
Cinnamon teal						200	400	500	1,000	200
Shoveler						3,000	3,000	3,000	3,000	200
Wood	200	300	500	2,000	2,500	3,000	3,000	3,000	3,000	200
Redhead						100	100	200	1,000	4,000
Ring-necked									200	1,000
Canvasback						300	400	3,000	4,000	5,000
Scaup			100	100	200					
Goldeneye									100	
Bufflehead						100	100	3,000	3,000	150
Ruddy										200
Other Waterfowl										
TOTAL DUCKS	5,700	7,925	10,850	20,800	24,900	35,000	39,000	43,900	59,000	92,700
Coot:	50	50	50	50	50	20,000	30,000	40,000	20,000	5,000

3 -1750a
 Cont. NR
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Calhoun MONTHS OF September TO December, 19 56

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18		seen	total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	700	1,000	1,000	2,000	3,000	2,000	1,000		105,805		
Cackling											
Brant											
White-fronted											
Snow	1,200	2,000	2,000	2,000	3,000	4,000	2,000		154,525		
Blue	1,300	4,000	3,000	3,000	4,000	5,000	3,000		189,525		
Other											
Ducks:											
Mallard	125,000	300,000	250,000	300,000	500,000	300,000	300,000		15,332,800		
Black	2,000	5,000	6,000	7,000	8,000	8,000	3,000		289,800		
Gadwall	300	3,000	3,000	1,000	1,000	800			86,100		
Baldpate	200	8,000	10,000	1,000	2,000	500			336,575		
Pintail	5,000	10,000	5,000	1,000	3,000	2,000	1,000		698,600		
Green-winged teal	1,000	2,000	1,000	1,000	1,000	1,000	500		122,500		
Blue-winged teal	300								436,100		
Cinnamon teal											
Shoveler	1,000	1,000	2,000	300	500	400	200		53,900		
Wood	200								125,300		
Redhead	200		200	1,000	5,000	2,000	1,000		68,400		
Ring-necked	3,000	1,000	1,000	500	1,000	1,000	200		91,700		
Canvasback	2,000	2,000	3,000	1,000	6,000	6,000	5,000		183,400		
Scaup	5,000	3,000	4,000	2,000	3,000	2,000	1,000		231,700		
Goldeneye			200	300	100	200	200		7,000		
Bufflehead		100	100			100	100		3,500		
Ruddy	200	200	300						49,000		
OTHER WATERFOWL	300		200	200	500	500	400		16,800		
TOTAL DUCKS	145,500	335,300	286,000	316,300	531,100	323,900	312,600		18,133,325		
Coot:	2,000	1,000	500	200	200				84,050		
				(over)							

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans				Principal feeding areas <u>Gilbert and Swan Lakes, and</u>
Geese	<u>449,895</u>	<u>11,000</u>		<u>cornfields within radius of 50 miles.</u>
Ducks	<u>18,133,385</u>	<u>531,100</u>		Principal nesting areas
Coots	<u>834,050</u>	<u>40,000</u>		
				Reported by <u>E. A. Davis</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Batastawa Months of September to December, 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Blue heron	20	9/5	175	10/11	4	12/29				
Egrets	400	9/5	3,000	9/25	2	12/21				
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	500	9/5	2,000	10/16	10	12/30				
Wilson snipe	200	9/5	500	10/20	5	12/30				

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons: Mourning dove White-winged dove					
IV. Predaceous Birds: Golden eagle Duck hawk Horned owl Magpie Raven Crow	resident all year.				
Reported by Edward A. Davis					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species during the refuge during the period concerned.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Calhoun Months of September to December, 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u> <u>Pink heron</u> <u>Nycticorax</u>	25	9/5	200 7,000	10/11 9/25	5 3	12/29 12/21				
II. <u>Shorebirds, Gulls and</u> <u>Terns:</u> <u>Gulls</u> <u>Killdeer</u> <u>Wilson snipe</u>	2,000 1,000 500	9/5 9/5 9/5	20,000 4,000 1,500	12/5 10/16 10/20	10,000 30 20	12/30 12/30 12/30				

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons: Mourning dove White-winged dove					
IV. Predaceous Birds: Golden eagle Duck hawk Horned owl Magpie Raven Crow	Residents all year				
Reported by.....				Edward A. Davis	

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species during the refuge during the period concerned.

1613

Refuge Colburn and Estabrook Months of September to December, 1956

[illegible]

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form R-3
(June 1945)

BIG GAME

Refuge Calhoun and Batehous

Calendar Year 1956

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Nothing to report under this.														

Remarks:

Reported by Edward A. Davis

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755

Form R-5
607

DISEASE

Refuge Calhoun and BatchtownYear 1956

Botulism

Lead Poisoning or other Disease

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks Nothing under this.

Kind of disease _____

Species affected _____

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks Nothing under this.

3-1756
Form NA
(April 1946)

FISH

Refuge.....Calhoun and Batchtown.....Year 1956...

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number re- moved for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Nothing to report under this.								

REMARKS:

3-1757
Form NR-504
(April 1946)

PLANTINGS

(Marsh - Aquatic - Upland)

Refuge Calhoun and Batchtown Year 1956

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Plant- ing	Survival	Cause of Loss	Remarks
Nothing to report under this.								

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....
Hedgerows, cover patches.....
Food strips, food patches.....
Forest plantings.....

3-1758
Form No. 1
(April 1946)

CULTIVATED CROPS

Refuge Batchtown National Wildlife Refuge Year 195 6

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Loca- tion	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				Compensatory Services, or Cash Revenue
					Acres	Bu. Har- vested	Harvested		Unharvested		
							Acres	Bu.	Acres	Bu.	
W. H. Clark		AU-25-1	corn bushbean	40 12	11	440			5-2/3	68	fall planting
Charles Baker		AE-25-2	corn	12	3	36			1	28	
Martin Hilsman		AU-25-3	corn millet	90 30	6-2/3	133			3-1/3	200	
Wilson Horkland		AE-25-4	beans	17	22	374					
		AE-25-5	corn	30	3	90			12	360	
			milo	12					3	36	
Paul E. Johnson		AU-25-6	corn	22	20	440			20	280	
Stanley Shivers		AU-25-7	wheat	12	12						

Summary of Crops Grown:	Crop	Acreage	Permittee's Share		Government's Share				Total Revenue
			Acres	Bushels	Harvested		Unharvested		
					Acres	Bu.	Acres	Bu.	
	Corn	66-2/3	15-2/3	1127			23	608	\$ 0.00
	Beans	5-2/3					5-2/3	68	
	Peas	22	22	374					
	Wheat	3-1/3		100			3-1/3	200	
	Wheat	3					3	36	
	Wheat	12	12	Fall planting			34	830	

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

Permit No. - List the number of the Special Use Permit issued to the individual.

Use or Location - The Unit No. or name specified in the Economic Use Plan should be listed in this column.

Crops Grown - A separate line of the form should be used for each crop grown by each permittee or by refuge personnel. This is important, since if each crop grown by each operator is not specifically enumerated, the report will be of no value for statistical purposes.

Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, brome grass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis, the total cash revenue received by the Service.

[illegible]

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

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Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, brome grass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis, the total cash revenue received by the Service.

Summary of Crops Grown:	Crop	Acreage	Permittee's Share		Government's Share		Total Revenue
			Acres	Bushels	Harvested Acres Bu.	Unharvested Acres Bu.	
	Corn	22 1/2	22 1/2	8386			\$ 0.00
	Resistant	13-1/3					
	Oats	9	9	240			
	Soybeans	10	10	648			
	Wheat	18-5/6	4	80			
	Flax	8-2/3					
	Winter wheat	50	298	9364	10	60	
	Clover	12					

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

Permit No. - List the number of the Special Use Permit issued to the individual.

Use or Location - The Unit No. or name specified in the Economic Use Plan should be listed in this column.

Crops Grown - A separate line of the form should be used for each crop grown by each permittee or by refuge personnel. This is important, since if each crop, grown by each operator is not specifically enumerated, the report will be of no value for statistical purposes.

Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, brome grass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis, the total cash revenue received by the Service.

Months of September through December, 1956

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Wheat	60 bu		60		60			none			

(8) Indicate shipping or collection points _____

(9) Grain is stored at _____

(10) Remarks _____

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

3-17
Form NR-9
(April 1946)

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge Calhoun and Batastow

Year 1956

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period of Collection	Method	Unit Cost	Amount	Source		
Nothing to report under this.								
Interior Duplicating Section, Washington 25, D.C. 84267								

HAYING & MOWING

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From To	Rate	Total Income	Remarks
Nothing to report under this.									

Acreage grazed.....	Animal use months.....	Total income Grazing.....
Acreage cut for hay.....	Tons of hay cut.....	Total income Haying.....

TIME REVERSAL

Refuge.....Calhoun and Hatchtown

Year ~~1956~~

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Nothing to report under this.								

Total acreage cut over.....

Total income.....

No. of units removed B. F.
Cords.....
Ties.....

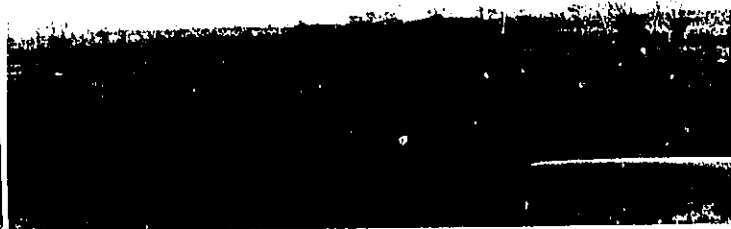
Method of slash disposal.....



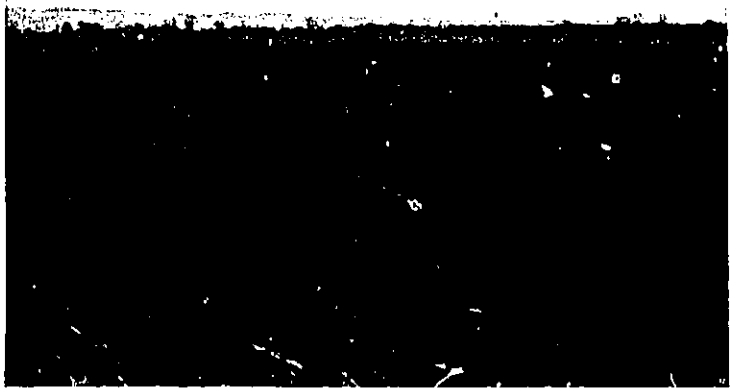
Area to be cleared at Swan Lake, Calhoun
Refuge. Picture taken before clearing.
February 24, 1955.



Same area pictured above after clearing.
March 9, 1956.



Marsh at Schoolhouse Lake, Calhoun Refuge.
Picture taken February 24, 1955 before
clearing.



Field in former marsh at Schoolhouse Lake.
Note brush piles after clearing. Picture
taken March 9, 1956.



Cottonwood-willow clearing at Calhoun Refuge.
March 9, 1956.





Nets in mouth of Flat Lake at junction of Swan
Lake and Illinois River. March 9, 1956.

(2) Predaceous Birds:

An estimated 25 red-tailed hawks are using the Calhoun Refuge, and about 15 are using the Batchtown Refuge.

An estimated 30 marsh hawks are using the Calhoun Refuge, and about 40 are using the Batchtown Refuge. There are 10 sparrow hawks in both areas.

An estimated 40 owls are using the Calhoun Refuge, and 10 are using the Batchtown Refuge.

WATER FOWL

MONTHS OF **January** TO **April**, 19**56**

[illegible]

3 -17506
 Cont. No.
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Batchtown MONTHS OF January TO April, 19 56

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods : Estimated : seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada		500	100							4,200	
Cackling											
Brant											
White-fronted											
Snow		700	50							5,250	
Blue		200	100							2,200	
Other											
Ducks:											
Mallard	15,000	20,000	6,000	8,000	3,000	400	100			1,300,600	
Black	500	300	100	200	100					20,300	
Gadwall	300	400	300	400	200	300				15,400	
Baldpate	600	700	400	500	300	400	200			27,300	
Pintail	3,000	4,000	2,000	2,000	500	300	300			110,600	
Green-winged teal		100	300	200	100	300				5,600	
Blue-winged teal	500	600	500	800	2,000	3,000	2,000			65,800	
Cinnamon teal											
Shoveler	200	300	200	400	500	800	1,000			23,800	
Wood	200	200	300	300	200	300	200			12,600	
Redhead	100	200	200	100						16,800	
Ring-necked	1,000	2,000	500	200						45,500	
Canvasback	300	400	200	100						22,500	
Scaup	5,000	12,000	15,000	8,000	3,000	1,000	500			403,900	
Goldeneye	100	100								8,400	
Bufflehead	100	100								2,800	
Ruddy	300	200	100	200						12,600	
Other - unidentified	300	100								11,600	
TOTAL DUCKS	27,100	41,700	26,000	21,400	9,900	6,600	4,300			2,158,200	
Coot:	4,000	5,000	3,000	2,000	500	200	300			126,000	
				(over)							

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans				Principal feeding areas _____
Geese	11,550	1,400		
Ducks	2,158,100	45,900		Principal nesting areas _____
Coots	126,000	5,000		
				Reported by _____

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

WATERFOWL

MONTHS OF **January** TO **April**, 19**56**

[illegible]

3-175

Cont. No. 1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE CalhounMONTHS OF January TO April, 19 56

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	1,000	1,000	20	20	20	20				108,390	
Cackling											
Brant											
White-fronted											
Snow	600	1,500	100	25	20					81,315	
Blue	700	600	100	50	30					65,960	
Other											
Ducks:											
Mallard	40,000	30,000	5,000	7,000	5,000	300	200			9,495,500	
Black	500	300	100	200	100					23,100	
Gadwall	100	900	600	800	500	500				23,800	
Baldpate	2,000	3,000	2,000	3,000	1,000	500	500			95,200	
Pintail	3,000	5,000	5,000	2,000	300	400	100			151,900	
Green-winged teal		100	300	400	200	100				7,700	
Blue-winged teal	500	800	1,000	3,000	8,300	10,000	5,000			198,100	
Cinnamon teal											
Shoveler	300	500	500	500	2,000	4,000	3,000			75,600	
Wood	200	200	400	500	500	300	300			17,900	
Redhead	200	300	200	300						43,400	
Ring-necked	2,000	5,000	2,000	1,000	500					128,800	
Canvasback	1,500	1,000	300	200						455,000	
Scaup	3,000	20,000	15,000	20,000	6,000	2,000	1,000			611,100	
Goldeneye	100	200								17,900	
Bufflehead	100	1,000	400	100						12,600	
Ruddy	2,000	2,000	500	500	300	400				88,900	
Goldeneye	200	200	100							51,100	
TOTAL DUCKS	55,700	99,900	33,100	39,500	24,100	18,500	10,300			11,496,000	
Coot:	6,000	8,000	5,000	4,000	1,000	400	500			209,300	
				(over)							

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans				Principal feeding areas
Geese	308,665	6,500		
Ducks	11,184,800	112,600		Principal nesting areas
Coots	202,300	8,000		
				Reported by

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Batchtown

Months of January to April 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Egrets	100	4/12	300	4/30	300	4/30				500
Blue heron	5	1/3	125	4/30	125	4/30				300
II. <u>Shorebirds, Gulls and Terns:</u>										
Gulls	7,000	1/1	25,000	2/25	100	4/26				30,000
Terns	1,000	1/1	5,000	2/15	100	4/26				20,000

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. Doves and Pigeons:										
Mourning dove	50	1/1	600	4/13	200	4/30				1,000
White-winged dove										
IV. Predaceous Birds:										
Red-tailed Eagle	30	1/1	50	2/8	10	4/5				100
Duck hawk										
Horned owl	1	2/10	30	4/25	2	4/21				15
Magpie										
Raven										
Crow	200	1/2	5,000	4/12	100	4/30				20,000
Reported by <u>Edward A. Davis</u>										

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Calhoun Months of January to April 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Egrets	50	4/12	100	4/30	100	4/30				250
Herons	10	2/1	125	4/30	125	4/30				350

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove	200	1/1	1,500	4/20	200	4/30			3,000
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden Eagle	25	1/1	100	2/8	20	4/5			100
Duck hawk									
Horned owl	4	3/20	10	4/25	2	4/30			15
Magpie									
Raven									
Crow	300	1/3	10,000	4/13	50	4/30			10,000
Reported by <u>Edward A. Davis</u>									

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

1613

to April, 1956

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Nothing to report in either area.										

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1754
Form NR-4
(June 1945)

SMALL MAMMA

Refuge Calhoun and Hatchtown

Year ending April 30, 1956

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
								Permit Number	Trappers Share	Refuge share				
	Nothing to report under this on either refuge.													

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

Reported by _____

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.